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Knowledge, Attitude and Practise about Beneficial and Harmful effects of Diet Soda

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Background and Aim: Soda or light drinks are sugar free and don't contain calories. Artificial sweeteners such as aspartame drastically affect our health by causing various diseases like stroke etc. The main aim of this study is to determine the level of knowledge possessed about diet soda and their attitude towards it.
Materials and Methods: A Cross sectional survey was conducted among dental populations with a sample size of 102. A self administered, structured questionnaire was prepared based on knowledge, attitude and practice about diet soda and consisted of 10 questions. It was circulated to the participants through Google forms. The statistics were done using SPSS software, a chi-square test was used to check the association and the 'p' value of 0.05 was said to be statistically significant.
Results: From this survey it was inferred that 81.37% people find diet soda unhealthy whereas 18.63% felt it isn't healthy. 56.86% felt it contained calories but 43.14% felt it didn't. Around 61.76% think that artificial sweeteners will lead to more headaches whereas 38.24% felt it won't cause headaches.
Conclusion: This study revealed that many people have little knowledge and are unaware of the consequences of diet soda. Therefore this study may help to gain wide knowledge about diet soda and also help them to change their attitude towards it.

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1. INTRODUCTION

Diet soda or light drinks are sugar-free artificially sweetened beverages with no calories. Instead of sugar artificial sweeteners such as aspartame, cyclamates, saccharin or sucralose are used to sweeten them. Diet sodas were first introduced in the 1950s for people with diabetes Eg: Diet Coke, Pepsi Max etc. Generally a person having the thought towards diet soda is for weight loss and physical fitness. Diet soda is assumed to be healthier than regular soda [1]. Some common ingredients in diet soda are carbonated water, sweeteners, acids, colours, flavours, preservatives, vitamins and minerals. Many people are unaware of the consequences these ingredients present in it can cause.

Excessive intake of diet soda can lead to long-term obesity [2] which leads to many other diseases such as hypertension, high LDL cholesterol, low HDL cholesterol or high levels of triglycerides. It can cause stroke, gallbladder diseases, many types of cancer, dental caries and can affect the quality of life based on the level of obesity. In some cases it might even be fatal. Aspartame is one of the major components of diet soda which has adverse effects on the body. Toxic effects are given out by aspartame after it is hydrolysed to aspartic acid and this might affect organs like the CNS [3]. It also increases the chance of diabetes mellitus with ASB's in people who are obese [4] and can also increase the risk in normal people as well [5].

In the future, we might see a rise in dental decay in developing countries because of modernization and due to increased dietary sugars intake [6]. Cardiovascular problems such as stroke can also occur due to uncontrolled consumption of diet soda [7]. Teenagers have increased the usage of diet soda drastically which has led to depression in many cases especially for those who consume more than 4 cans per day [8]. Insufficient knowledge, awareness about the harmful consequences of diet soda might lead to numerous diseases.

Our team has extensive knowledge and research experience that has translated into high quality publications [9–28].

This research is needed to provide knowledge about diet soda and its consequences which in the future might help them to change their attitude towards diet soda usage and prevent many diseases. The main purpose of this study is to determine the amount of knowledge people possess about diet soda, what are their attitudes towards it, how much do they use it and whether they know about the way it affects the health, organs and body.

2. MATERIALS AND METHODS

This survey was conducted in a private dental institution. It uses a quantitative method and is a type of cross sectional survey study. The pros of this study are that the samples were easily accessible and it helps to provide more knowledge and creates awareness about diet soda as it is through an online platform. The con of this survey was that it had quite less sample size.

Simply random sampling was done to obtain results from different people and prevent biasing. This survey had a sample size of 102 and it mostly involved teenagers.

Data was collected through a questionnaire which consisted of questions pertaining to people's knowledge on diet soda and their attitude towards it. A standardized questionnaire was made through Google forms and the same was circulated throughout. Some of the knowledge related questions that were asked were whether diet soda is healthy or unhealthy, does it contain calories, and does it increase the risk of osteoporosis, stroke and other diseases. Some practice relates questions such as how many diet soda cans people drink per week were also asked. Around 102 responses were obtained, copied to excel, coded then transferred to SPSS software. Chi square test was done to check the association and a 'p' value of $p<0.05$ was considered to be significant.

3. RESULTS

According to the results obtained 81.37% of people felt diet soda is unhealthy whereas 18.63% found it healthy. 56.86% of people felt diet soda contains calories whereas 43.14% felt diet soda doesn't contain calories (Fig. 1). 61.76% of people felt artificial sweeteners cause headaches whereas the rest 38.24% say it doesn't cause headaches (Fig. 2). According to 40.20% of people felt diet soda can cause stroke whereas 17.65% think that it can't and some are in a dilemma (42.16%) whether it will cause or not. It is implied that 35.29% people think the diet

soda increases the risk of osteoporosis in women, 18.63% think it won't cause osteoporosis in women and some were in a confused state (46.08%) as to whether it causes or not (Fig. 3). It was inferred that 72.55% people feel it will alter gut microbiome whereas 27.45% thought that it does not alter it. 50.98% people felt it decreases kidney function and 12.75% felt it doesn't damage. There are some people that are about 36.27% who are unsure. 46.08% of people felt diet soda when mixed with alcohol is more intoxicating whereas 16.67% felt the other way round 37.25% people were unsure about the answer to this question. 44.12% people drink around one can of diet soda per week, 42.16% people drink around two cans and 13.73% drink three or more cans per week. 38.24% of people felt drinking diet soda is worse than drinking regular soda and 61.76% felt it's not as bad as regular soda.

Females found diet soda healthier than males and also felt it has less calories i.e 0 calories than males (Fig. 4). Women think artificial sweeteners are more in quantity in diet soda than males. Many people are unsure whether it increases the risk of stroke and females feel it has more chances to cause stroke than males (Fig. 5). About 46.08% people are unsure whether it increases risk of osteoporosis in women, out of which females felt it will cause osteoporosis more than males. Females think diet soda alters gut microbiome and decreases kidney function than what males think. Females prefer to say that diet soda becomes more intoxicated with the addition of alcohol. Most of the females drink more than two cans of diet soda per week. Majority of them think drinking diet soda is definitely worse than drinking regular soda.

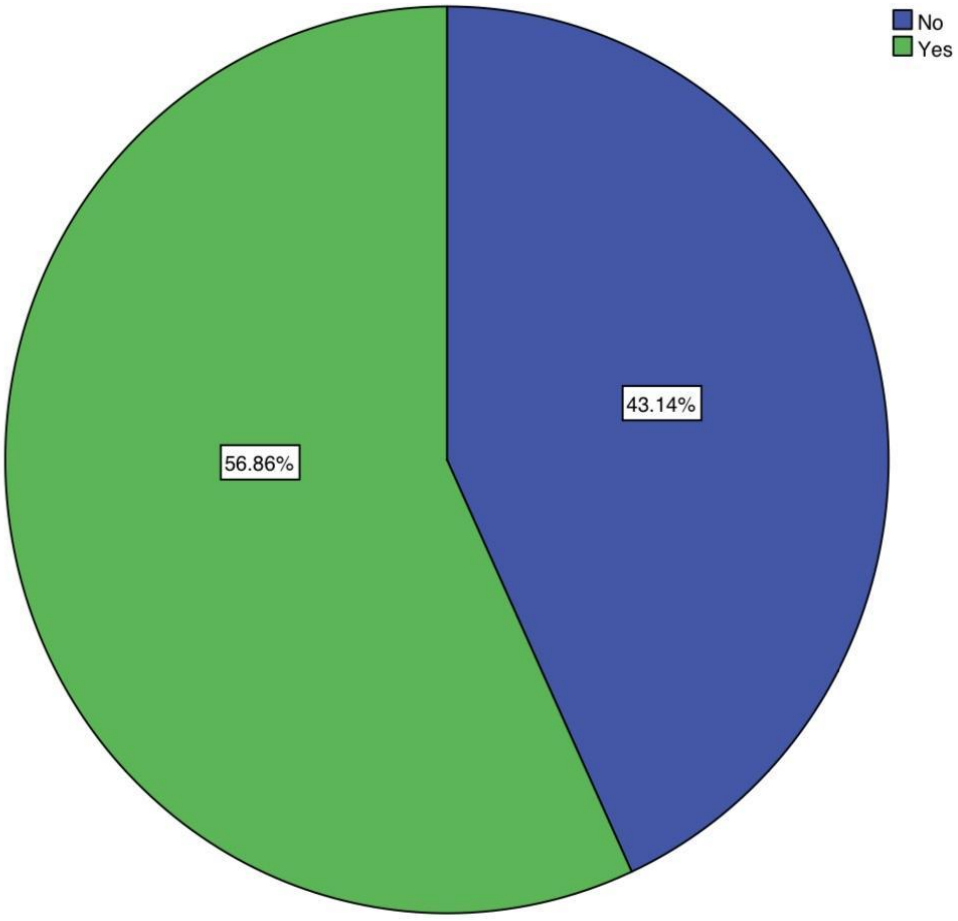

Fig. 1. The pie chart shows the percentage distribution whether it contains calories or not. Blue colour represents no and green colour represents yes. Majority people 56.86% felt it contains calories, lesser people, 43.14% responded that it doesn't

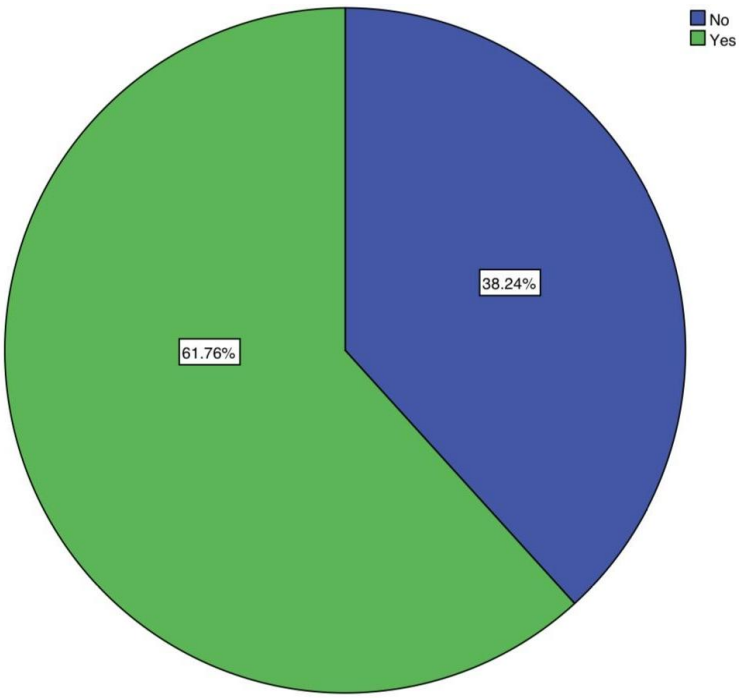

Fig. 2. The pie chart shows the percentage distribution of whether artificial sweeteners cause headaches. Blue represents no and green represents yes. Majority 61.76 % felt it will cause headaches whereas the rest 38.24% felt it wont

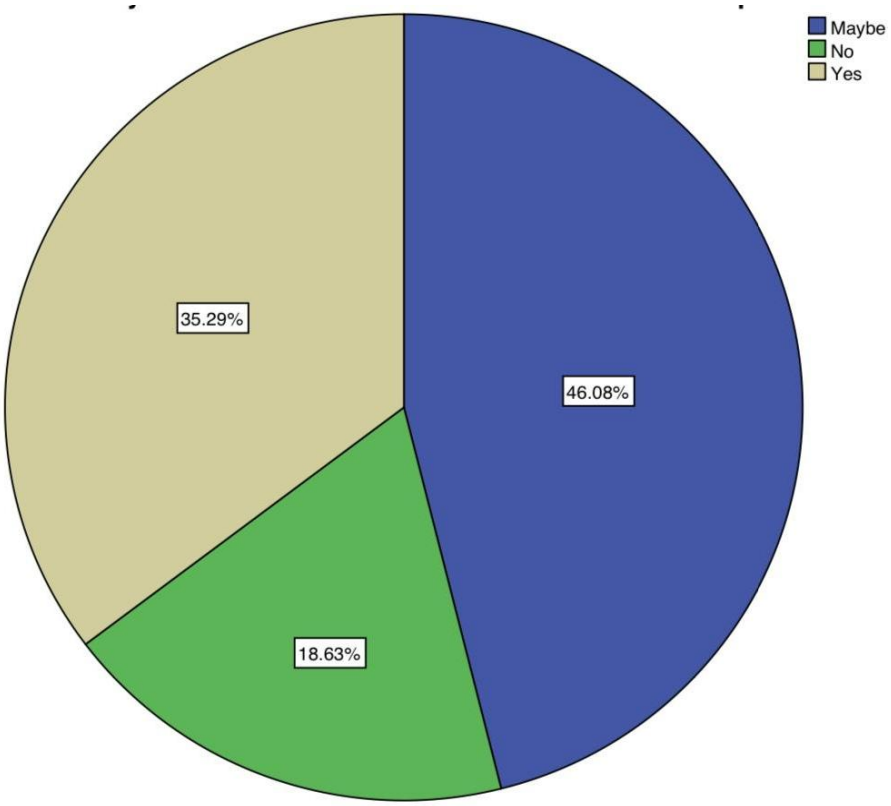

Fig. 3. The pie chart shows the percentage distribution as to whether people felt it will cause osteoporosis in women. Blue represents may be, green represents no, sandal represents yes. Majority people 46.08% were unsure, 35.29% felt it will cause and 18.63% felt it doesn't

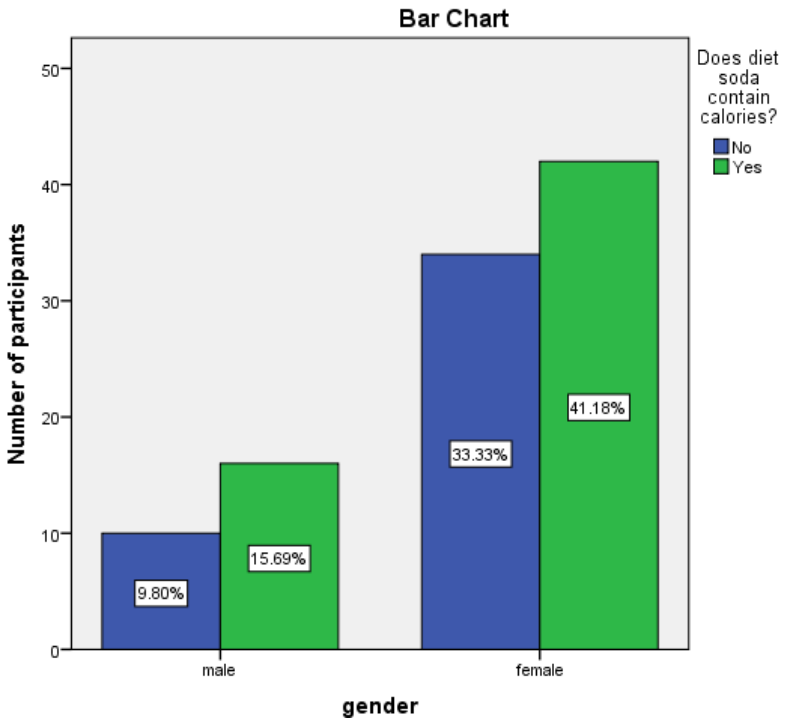

Fig. 4. The bar graph represents the association between gender and whether people think diet soda contains calories or not. The X- axis denotes gender and the Y-axis denotes the number of responses. Green represents yes and blue represents no.Majority of females (41.18%) were more unaware that diet soda contains calories. Pearson chi square test shows p value of 0.311, which is statistically insignificant

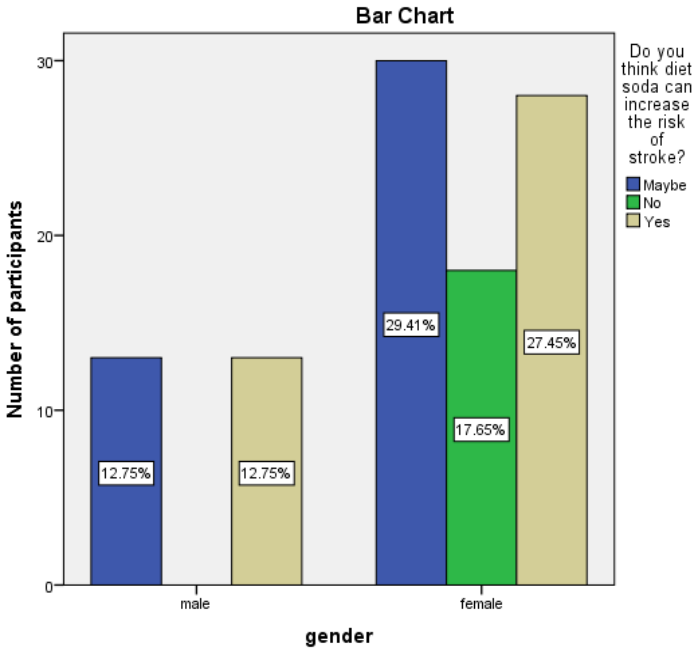

Fig. 5. The bar graph represents the association between gender and whether people think it will cause stroke or not. The X-axis denotes gender; Y- axis denotes the number of responses. The blue denotes maybe, green denotes no, whereas sandal colour represents yes. Majority of females (29.41%) were unsure whether diet soda causes stroke or not. Pearson chi square test shows a p value of 7.501 which is statistically insignificant

4. DISCUSSION

From this survey it is inferred that there is no significant relation between people and whether they know that diet soda is healthy or unhealthy. Many harmful ingredients present in diet soda can make it very unhealthy and can cause many diseases [29]. There is no significant relation between teenagers and the amount of calories it contains, whether artificial sweeteners can cause headaches or not. Furthermore there isn't any significant relation as to whether alcohol when mixed with diet soda is more intoxicating and that it can cause osteoporosis in women. That is people are still unaware about the consequences and whether it causes osteoporosis, stroke, headaches etc. Many research articles have proved that it is harmful. There is a decrease in density of bones which might lead to osteoporosis and fracture [30]. This is in line with another research article which also stated that it has a great impact on organs [3]. Also there is no proper relation between gender and number of diet soda cans consumed per week and whether it is better than regular soda. This clearly shows that insufficient knowledge about diet soda has increased its consumption. Insignificant relation means that they aren't aware of the consequences. There is insignificant relation between gender and the increase in the risk of stroke and how it alters gut metabolism and kidney function. This is in accordance with another research that says that it does increase the chances of several medical conditions such as diabetes as well [31]. This shows that in this regard people know that it can lower kidney function. Based on this study, many people lack the knowledge and are unaware about the adverse effects it can cause.

The only drawback of this research is that it has a lesser number of sample sizes. This study will help people gain knowledge and be aware of the consequences of diet soda. This will in turn help them change their attitude towards it and will help them have a better quality of life by reducing the chances of getting sick.

5. CONCLUSION

This study concludes that people have very less knowledge about the serious health issues diet soda can cause. This less knowledge has impacted their way of living and their attitude towards it. Therefore there is absolutely no control over diet soda consumed by teenagers.

CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

It's not applicable.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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